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Commonwealth of Massachusetts
Executive Office of Environmental Affairs

Department of Environmental Protection



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Acting Commissioner

GOVERNMENT DOCUMENTS
COLLECTION

BUREAU OF RESOURCE PROTECTION BUREAU OF WASTE SITE CLEANUP

DEC 29 1996

MASSACHUSETTS CLOSURE REQUIREMENTS FOR SHALLOW INJECTION WELLS

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Attached is a copy of guidance provided by the Bureaus of Resource Protection and Waste Site Cleanup on the procedure to close shallow injection wells. Please note that this document is a revised version of earlier documents of the same title and associated standard operating procedures, and supersedes all previous versions. In particular, this document incorporates revisions to the Massachusetts Contingency Plan (MCP), 310 CMR 40.0000 (effective 10/01/93). A summary of this guidance for business owners and operators and other non-technical readers has been appended to this document (Appendix VI).

12/13/94

Date

Dean Spencer

Dean Spencer
Acting Assistant Commissioner
Bureau of Resource Protection

12/5/94

Date

James C. Colman

James Colman
Assistant Commissioner
Bureau of Waste Site Cleanup

REVISED MASSACHUSETTS CLOSURE REQUIREMENTS FOR SHALLOW INJECTION WELLS

December 1994

1.0 BACKGROUND

The Department of Environmental Protection (hereafter referred to as the Department), in addition to local and federal agencies, regulates discharges to protect the quality of ground and surface water resources used for drinking water and other purposes. The Underground Injection Control (UIC) Program regulates discharges to "shallow injection wells" (310 CMR 27.00). Injection wells include most subsurface leaching systems (with the exception of septic systems used solely for sanitary waste disposal). Common examples of shallow injection wells in Massachusetts are dry wells, septic systems tied to floor drains in industrial areas, leaching catch basins, and oil/water separators leading to a leaching field. Floor drains themselves are *not* injection wells; however, they are a common point of entry to subsurface leaching systems which do constitute injection wells.

The discharge of liquid wastes to the environment via shallow injection wells has been a suspected source of contamination in many cases of public drinking water supply closure in Massachusetts. The costs resulting from such contamination are both environmental (permanent or temporary loss of a water supply resource) and financial (the costs of remediating a contaminated water supply and/or developing new sources of water supply). Preventing migration of any contamination emanating from an injection well is much less costly than contamination correction or new water supply development, and serves to protect the environment from long-term or irrevocable damage.

Pursuant to the UIC regulations, where the potential exists for pollutants to enter an injection well (e.g., by means of a floor drain) and where the presence of the pollutants causes, or is likely to cause, a violation of any Massachusetts Drinking Water Regulation, or in the opinion of the Department adversely affects, or is likely to adversely affect, the health of persons, the use of the well is prohibited. With the exception of those discharges authorized under the Department's Ground Water Discharge Permit program, the Department considers this prohibition to include the use of any injection well with an indoor point of entry at facilities which use, store, or otherwise manage hazardous materials and/or wastes (as defined in 310 CMR 30.000 and 310 CMR 40.0000).

In addition to the procedures specified in this document, the owner or operator of a facility where an unauthorized injection well is located must discontinue the unauthorized use of the injection well. The use of an injection well may be discontinued by, for example, sealing the floor drain(s) which lead to it, or connecting the drain(s) to an industrial holding tank (Department permit required) or a municipal sewer system (Department or administrative

entity permit required). For guidance on this process, contact the UIC Program at the address and phone number listed under "Submittals to UIC Program" (section 7.1). Copies of all Department permit applications are available from the Department's Infoline (617-338-2255 or 1-800-462-0444).

2.0 APPLICABILITY

This guidance document applies to the closure of all unauthorized shallow injection wells in Massachusetts. All closure procedures should be performed as specified below in this document.

The information contained in this document is intended solely for guidance. This document does not create any substantive or procedural rights, enforceable by any party in any administrative proceeding with the Commonwealth. In addition to summarizing specific requirements, this document also provides guidance on what measures the Department considers acceptable for meeting the general requirements set forth in the regulations. Parties using this guidance should be aware that there may be other acceptable alternatives to this guidance for achieving compliance with such general regulatory requirements.

The regulatory citations provided throughout this document are not meant, and should not be relied upon, to be a complete list of all applicable regulatory requirements.

3.0 GENERAL

The purpose of this guidance document is both to outline the components of a shallow injection well closure and to alert the party undertaking the closure of his/her potential responsibilities under MGL c.21E and 310 CMR 40.0000, the Massachusetts Contingency Plan ("MCP", effective 1993 and as revised).

Closure procedures discussed in this document include:

- decommissioning an injection well;
- identifying, excavating, and managing contaminated materials encountered during the closure; and
- conducting confirmatory sampling in the footprint of the excavation.

While undertaking the closure of a shallow injection well, if contamination in soil or groundwater by oil and/or hazardous material (OHM) is encountered, then the provisions of the MCP and guidance provided by Bureau of Waste Site Cleanup (BWSC) policies are applicable. Under the authority of M.G.L. c. 21E, the MCP establishes specific requirements for providing notification to the Department and responding to releases of OHM. These notification requirements, collectively cited as 310 CMR 40.0300, should be reviewed in full

by the party proposing to undertake the closure of a shallow injection well prior to doing so. "Assessment only" activities prior to notification under the MCP may be conducted without approval from the Department.

If contamination which constitutes a release of oil and/or hazardous material to the environment and triggers one or more reporting criteria of the MCP is encountered during the assessment activities and/or closure of a shallow injection well, the Department must be notified by the property owner or operator (see "Who Shall Notify" 310 CMR 40.0331) by the applicable deadline (2 Hour, 72 Hour or 120 Day reporting time limits; see 310 CMR 40.0310). In cases where the contamination above reporting thresholds is limited to soil, notification may not be required if a "Limited Removal Action (LRA)" can be properly completed in accordance with 310 CMR 40.0318.

After notification, an Immediate Response Action (IRA) may be required, or a Release Abatement Measure (RAM) may be appropriate. The sections of the MCP which discuss these actions (40.0410 and 40.0440 respectively) should be reviewed thoroughly prior to beginning the closure of the injection well. Like other activities under the MCP, these actions are subject to audit by the Department.

Appendix I summarizes LRAs, IRAs, RAMs, and Comprehensive Response Actions with regard to their applicability to shallow injection well closure.

The MCP requires persons conducting response actions (e.g., IRAs, RAMs, comprehensive response actions) to employ a **Licensed Site Professional (LSP)** to oversee assessment and cleanup actions and document that such actions are performed in compliance with the MCP. LSPs are experienced professionals in assessment and cleanup activities who are licensed by the Commonwealth. Performance of LRAs does not require the use of an LSP, except as specified under "Excavation and Management of Contaminated Soils" (section 6.3). For a list of LSPs, please contact the LSP Board at 617-292-5794.

4.0 SAMPLING PROTOCOL

All sampling and analyses should be performed in accordance with the MCP. In particular, the provisions of "Environmental Sample Collection and Analyses" (310 CMR 40.0017) and the performance standards at 310 CMR 40.0191 should be followed.

All chemical analyses of samples taken as part of closure and assessment activities should be performed by a laboratory certified by the Commonwealth for the analysis of the contaminants of concern, unless the analytical results provided by the laboratory are accompanied by sufficient QA/QC information to demonstrate the validity of the results.

5.0 INITIAL CLOSURE ACTIVITIES

Procedures noted below in 5.1 and 5.2 should be performed in every case of shallow injection well closure.

5.1 Removal of Existing Sludge\Wastewater:

Prior to performing any other closure procedures outlined in this document, any existing sludge or wastewater from the injection well (e.g., dry well, oil/water separator or MDC trap, septic system, other) should be pumped and disposed of as discussed below.

The Department recommends that a sample of the sludge/wastewater be taken. The results of this sample should be used to pre-characterize the oil and/or hazardous material which may also be present in the environment surrounding the injection well. Sludge/wastewater samples from the injection well should be analyzed for:

- volatile organic compounds (using EPA Method #8240 or 8260);
- total petroleum hydrocarbons (TPH) (using infrared EPA Method #418.1 or a GC/FID methodology);
- total metals (using EPA Methods 7000 series or EPA 6010). Metals analysis may be limited to those metals that could reasonably be expected to be present based on historical use of the facility and/or known discharges to the shallow injection well system;
- other parameters (e.g., PCBs, pesticides) based on specific knowledge of oil and/or hazardous materials used, stored or disposed of at the site, and the site's general history.

As indicated by the results of these analyses, additional testing of the sludge/wastewater may be warranted to determine for disposal purposes whether the material is a hazardous waste under 310 CMR 30.000, the "Massachusetts Hazardous Waste Regulations." Hazardous wastes must be transported by a hazardous waste hauler licensed under M.G.L. c.21C and 310 CMR 30.000. Non-hazardous industrial wastewaters may be taken to a Wastewater Treatment Facility (WWTF). Where required, permission from the WWTF to dispose of the wastewater at the WWTF should be obtained and/or additional testing performed prior to the transport of the wastewater.

5.2 Separators

Where in use, separators (also known and used as oil/water separators, sand traps, gas traps, and MDC traps) should be cleaned (with sludge/wastewater disposed of as noted above in section 5.1). Except in cases where the separator will remain in use (e.g., system connected to sewer line), the structure should either be removed or backfilled with clean fill, sand, or gravel with both the inlet(s) and outlet(s) plugged with a permanent seal.

6.0 ADDITIONAL CLOSURE ACTIVITIES

Procedures outlined in sections 6.1 - 6.4:

- **must** be performed in cases in which the Department has issued a Notice of Noncompliance (NON) or enforcement order specifically requiring these procedures to be performed.
- **should** be performed as part of remedial actions in cases in which a known release or threat of release (as defined in the MCP) to the environment of OHM has occurred or exists. In these situations, all relevant requirements of the MCP and c.21E must be satisfied.
- **are recommended** by the Department to be performed as best environmental management practices in all other cases.

6.1 Decommissioning of Injection Well System

After removal of the contents (see "Removal of Existing Sludge/Wastewater" (section 5.1)) of the injection well, the well should be decommissioned according to the following criteria (which correspond to the injection well type). Remedial activities associated with contamination in the impacted leaching media are discussed in "Excavation and Management of Contaminated Soils" (section 6.3).

- **Drywells/Cesspools:**
Excavate and remove underground structure. All inlets to the system must be plugged.
- **Septic Systems:**
Visually inspect tank. Tanks without holes or cracks may be put back into service for sanitary waste only (no industrial or commercial process wastewater should be tied into the septic system). The local Board of Health should be notified in the event that holes and/or cracks are identified in a system. Actions to remove the tank should be coordinated with the local Board of Health.
- **Other Systems:**
Any other injection well system (e.g., non-septic leach fields) should also, depending on the system, either be excavated and removed, or have any and all inlets, and where possible outlets, sealed off.

All excavation holes must be backfilled as noted under "Confirmatory Sampling" (section 6.4.A).

6.2 Samples Proximate to Point of Discharge

A minimum of two soil grab samples should be collected from different locations and analyzed in accordance with the following:

- A. Each sample should be collected at or below, and within one foot of, the point of discharge to the ground;
- B. Each sample should be screened for "total organic vapors" in headspace using a portable photoionization detector or flame ionization detector as prescribed in Appendix II, "Jar Headspace Analytical Screening Procedure." This data should be expressed as total organic vapor (volatiles) in ppm (v/v) as benzene.
- C. The samples should be analyzed as follows:

VOCs: The sample with the highest headspace reading response should be analyzed for VOCs according to EPA method 8240, or for Halogenated Hydrocarbons via EPA method 8010 or Aromatic Hydrocarbons via EPA method 8020 if the contaminants of concern have been targeted based on the earlier analyses, in accordance with EPA publication Test Methods for Evaluating Solid Waste (EPA/SW 846) or equivalent methods.

TPH: Each sample should be analyzed for TPH as outlined in Appendix III, "Petroleum Hydrocarbon Analysis."

OTHER: Each sample should be analyzed for metals and other parameters according to the corresponding criteria noted under "Removal of Existing Sludge\Wastewater" (section 5.1).

6.3 Excavation and Management of Contaminated Soils

If contamination above the applicable MCP cleanup standards is identified in the soils surrounding the injection well, the contaminated soils should then be remediated by soil excavation or other remedial methods.

Excavated contaminated soils should be managed according to the MCP (see 310 CMR 40.0030), the Massachusetts Hazardous Waste regulations (310 CMR 30.000), and related Department Policies. Contaminated soils should be segregated from uncontaminated soils (based on total organic vapor headspace readings and visual/olfactory observations) and stockpiled separately. Soils contaminated with a listed hazardous waste or identified as exhibiting a characteristic of a hazardous waste are subject to the management and disposal requirements of 310 CMR 30.000. All excavated contaminated soil, including that generated as a result of an LRA, should be managed as set forth in 310 CMR 40.0030 and 310 CMR 30.000 in a manner that ensures the protection of health, safety, public welfare, and the environment.

If soil excavation is conducted as part of an LRA, the following limits, as set forth in 310 CMR 40.0318, shall apply:

- Not more than 100 cubic yards of soil contaminated solely by a release of oil or waste oil may be excavated.
- Not more than 20 cubic yards of soil contaminated by a release of hazardous material, or a mixture of oil (or waste oil) and hazardous material may be excavated.
- If groundwater contamination above a reporting threshold is encountered, or if any 2- or 72-Hour reporting criterion is triggered while conducting an LRA, notification to DEP is required. Notification is also required if the removal action cannot be accomplished within the LRA volume limits specified above.

If temporary storage of contaminated soil is necessary, stockpiled soil should be placed on, and covered with, a polyethylene tarp (6-mil minimum thickness). Contaminated stockpiles that are to be managed off-site may not remain at the location any longer than 120 days.

Parties performing an LRA should note that, although an LSP is not required to perform the LRA, an LSP must nonetheless be employed if the Bill of Lading soil management process (310 CMR 40.0318(8) and 310 CMR 40.0035(1)(i)) is to be used to manage soils generated by the LRA.

6.4 Confirmatory Sampling

A. Confirmatory Soil Samples

Once the contaminated soil has been excavated, separate soil grab samples should be taken from the bottom and sides of the excavation to characterize the levels of residual contamination in the remaining "clean" soils and determine whether additional remedial actions may be needed. These samples should be analyzed for the parameters identified by previous analyses.

Once all contaminated soil is excavated and confirmatory samples taken, the excavation should be backfilled with clean compacted fill. For safety reasons, no hole should be left open or unsecured overnight.

B. Follow Up

1. If the samples specified immediately above under "A. Confirmatory Soil Samples" do not require notification under the MCP and there is no reason to suspect groundwater contamination at or down-gradient from the injection well, the following items "B.2" and "B.3" may be skipped.
2. If the confirmatory soil samples specified immediately above in "A" are above the MCP notification threshold, the party undertaking the closure shall notify (if notification has not already occurred) the BWSC in the appropriate DEP Regional

Office and continue all further remedial activities in accordance with the MCP (see Appendix IV for information on how to contact DEP).

Note: If conducting the cleanup as an LRA and the confirmatory samples indicate further contamination above the reporting threshold in soil, the party may continue to remove soil as an LRA provided the action still falls under the limitations noted in "Excavation and Management of Contaminated Soils" (section 6.3). If the activity cannot be concluded under the constraints of the LRA, then the party must notify the Department under the "120 Day" notification requirements. Excavation may be continued as a RAM with DEP's approval.

3. If there is reason to suspect groundwater contamination at or down-gradient from the injection well, the party undertaking the closure should conduct further sampling (e.g., install monitoring wells). If groundwater contamination above applicable reportable concentrations is confirmed, the party must notify (if notification has not already occurred) the Department's BWSC accordingly and continue all further remedial activities in accordance with the MCP.

7.0 SUBMITTALS TO THE DEPARTMENT

7.1 Submittals to UIC Program:

- Upon completion of the injection well closure, complete a UIC Notification Form (Appendix V) and submit it to the UIC program at the address below. This form will establish the date of closure of a shallow injection well for your own and the Department's records.
- In cases where soil sampling and associated activities are required due to the issuance of an enforcement order from the Department's UIC program, the following must also be submitted to the UIC program:
 - a site plan with locations of floor drains, treatment systems (separators, septic systems, etc.), points of discharge to the ground, screening and sampling locations, the boundaries of the excavated area; and
 - screening and analytical results.

Submittals to the UIC program should be made at the following address:

DEP/Division of Water Supply
Underground Injection Control Program
One Winter Street, 9th floor
Boston, MA 02108
(617/292-5770)

Copies should also be sent to: Local Board of Health
 Local Water Department

7.2 Submittals to BWSC and Record Retention:

Documentation associated with the closure of a shallow injection well should be submitted and/or retained as specified in Appendix I, section B.

Submittals to the Bureau of Waste Site Cleanup should be made at the appropriate Department regional office. Appendix IV is a list of Massachusetts cities and towns (indexed by regional jurisdictions) which provides the address and telephone numbers for the four regional offices and Boston.

All submittal forms and BWSC policies are available from the "MCP Hotline" through the Department's InfoLine (617-338-2255 or 1-800-462-0444). Computer/modem access to BWSC policies and regulations can be obtained by dialing 617-292-5546.

- APPENDIXES:**
- I. Response Actions Under the MCP
 - II. Jar Headspace Analytical Screening Procedure
 - III. Petroleum Hydrocarbon Analysis
 - IV. DEP Regional Phone #s and List of MA Cities and Towns by Region
 - V. UIC Notification Form
 - VI. Q & A Summary for the Non-Technical Reader

Appendix I

Response Actions Under the MCP

The MCP process provides for timely cleanup actions for relatively minor releases of oil and/or hazardous material. For the minor releases, a brief discussion of such cleanup actions (LRAs, IRAs, and RAMs) with respect to the closure of a shallow injection well is provided below. However, it should be noted that larger/more complex releases will necessitate more comprehensive assessment and remedial actions (see below, MCP Process flow chart).

A. Summary of Response Actions

LRAs: Limited Removal Actions may be performed to remediate oil and/or hazardous material in soil that is subject to a 120 day MCP reporting threshold. All excavation activities associated with an LRA must occur within 120 days of obtaining knowledge of the release. Soil excavation limits associated with LRAs are discussed under "Excavation and Management of Contaminated Soils" (section 6.3). If all soil at or above the 120 day reportable concentration is successfully removed and managed as an LRA, notification to the Department of the release is not required.

IRAs: Immediate Response Actions are performed subsequent to notification of a "2-Hour" or "72-Hour" reporting condition. The Department's BWSC must always be notified of such site conditions that constitute time-critical releases (as defined in 310 CMR 40.0311-40.0313). Examples of conditions requiring IRAs include, but are not limited to, conditions that are likely to be an Imminent Hazard (see 310 CMR 40.0426), the presence of separate phase oil and/or hazardous material in the ground water (Non-Aqueous Phase Liquid (NAPL)), and conditions of Substantial Release Migration (see 310 CMR 40.0413). In the event that such a condition is identified during activities related to the closure of the shallow injection well, an IRA shall be taken (310 CMR 40.0412) to assess, eliminate, and/or abate the site conditions requiring an IRA.

IRAs are subject to prior Departmental approval with a few exceptions (exceptions include the construction of a fence, and/or the posting of signs (310 CMR 40.0420(3)), and/or where the delay involved in notifying and obtaining approval would substantially exacerbate release or site conditions or endanger health, safety, public welfare or the environment (310 CMR 40.0420(7))). Prior to implementing an IRA, the party proposing to conduct the activity **must communicate to the Department their intentions** and whether the IRA will involve the implementation of remedial actions. Where time permits, and where the Department declines to provide oral approval, a written "Immediate Response Action Plan" must be submitted for DEP approval within 60 days from the original communication.

RAMs: Release Abatement Measures allow the implementation of certain "prudent to do" accelerated remedial actions, such as those described in this document, to stabilize, treat, control, minimize or eliminate releases.

Prior to implementing a RAM, the party proposing to conduct the activity must submit a complete "Release Abatement Measure Plan" (310 CMR 40.0444) and appropriate fee (310 CMR 4.00) to BWSC. These plans have a 21 Day "presumptive approval". If the Department fails to issue written approval or denial of the plan within 21 days of receipt, approval of the plan shall be presumed. RAMs conducted after Tier Classification and at approved waiver sites in accordance with the provisions of 310 CMR 40.0400 do not require approval from the Department.

Comprehensive Response Actions: If the required remedial actions under the MCP are not completed within one year from the date of notification to the Department, "Tier Classification" of the disposal site must be performed. Assessment and remedial actions continuing after one year from notification (and Tier Classification) are termed Comprehensive Response Actions (see 310 CMR 40.0500 and 310 CMR 40.0800). Please note: RAMs may also be performed after Tier Classification.

B. Summary of Required Documentation

Documentation associated with the closure of a shallow injection well should be submitted and/or retained as noted below.

LRAs: Where an LRA is performed as part of the closure of an injection well, records documenting that an LRA has been completed must be maintained by the party undertaking the activity for a minimum of 5 years (310 CMR 40.0318(7)). No submittals to BWSC are required.

IRAs: An Immediate Response Action shall be considered complete when the release, threat of release and/or site conditions which gave rise to the need for that Immediate Response Action have been assessed, and where necessary, remediated in a manner and to a degree that will insure, at a minimum, both (a) the accomplishment of any necessary stabilization of site conditions and (b) the elimination or control of any Imminent Hazards to health, safety, public welfare and the environment without the continued operation and maintenance of active remedial systems, pending completion of any necessary comprehensive response actions (310 CMR 40.0427(1)).

An "Immediate Response Action Completion Report" (IRAC, 310 CMR 40.0427(2)) must be submitted to the Department within 60 days of completion of the response actions. An IRAC is not required if a "Response Action Outcome Statement" (RAO) is submitted to the Department within 120 days of first informing the Department of the need to conduct an IRA.

RAMs: RAMs are considered complete when the objectives of the RAM have been met, and when all active and ongoing remedial actions related to the RAM have been terminated. A "Release Abatement Measure Completion Report" (310 CMR 40.0446) must be submitted to the Department no later than 60 days following the completion of those remedial actions proposed in the "Release Abatement Measure Plan" as approved or presumptively approved by the Department (310 CMR 40.0443(2)). A Release Abatement Measure Completion Report shall not be required for sites where an RAO is submitted to the Department within 120 days of obtaining approval (oral, written or presumptive) from the Department to conduct the RAM (see 310 CMR 40.0446). If the remedial activities exceed the 120 day limit then "Status Reports" (310 CMR 40.0445) must be submitted. These reports are due 120 days following Department approval of the RAM and every 6 months thereafter, until a Release Abatement Measure Completion Report has been submitted.

MCP FLOWCHART

FRONT END

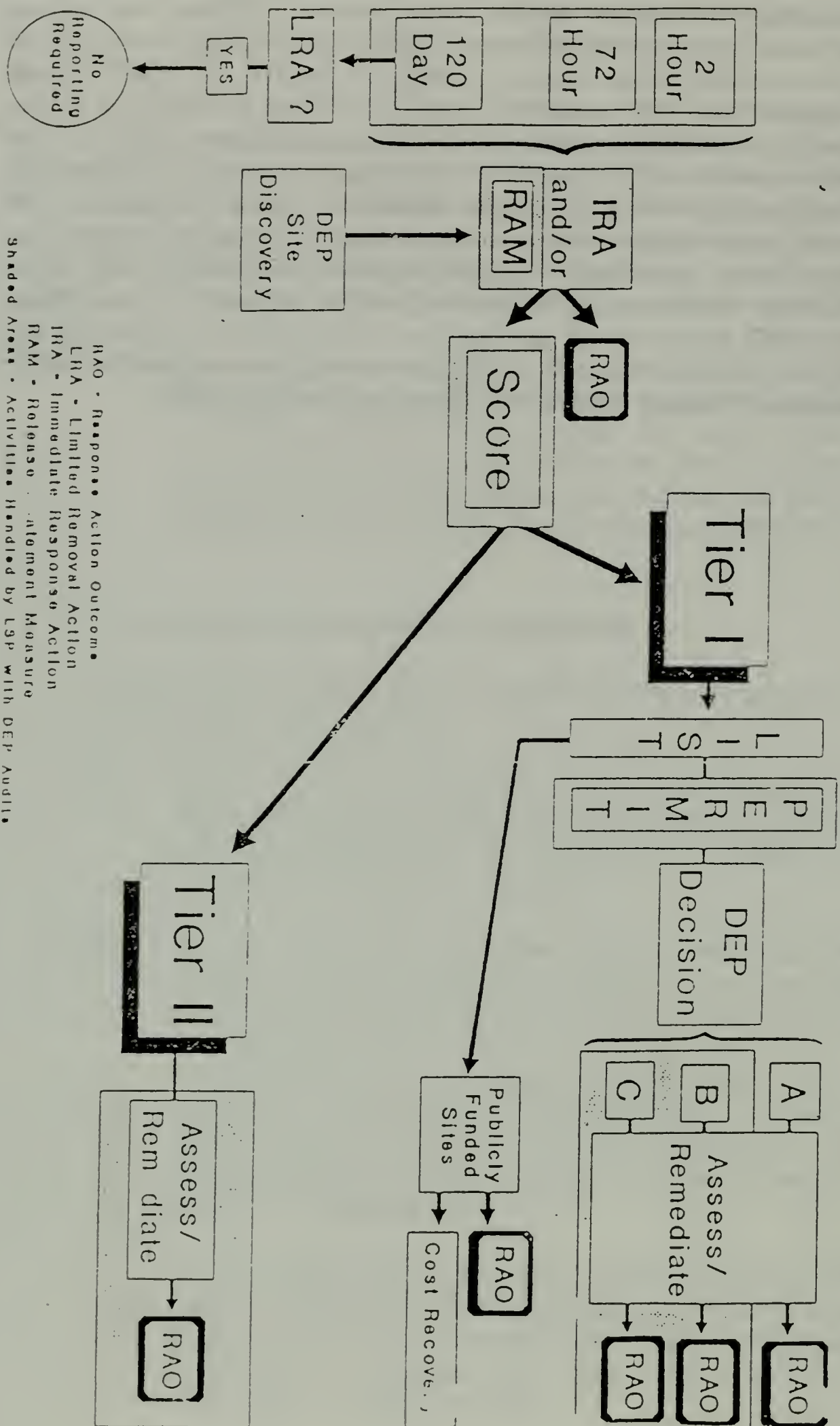
COMPREHENSIVE RESPONSE ACTIONS

Reporting
Trigger

Up To 1 Year

Up To 5 Years

Public Involvement Activities May Take Place At Any Point In This Process



APPENDIX II

JAR HEADSPACE ANALYTICAL SCREENING PROCEDURE

The following are recommended procedures for conducting analytical screening of gasoline-contaminated soils utilizing a portable Photoionization Detector (PID) or Flame Ionization Detector (FID):

- (1) Half-fill two clean glass jars with the sample to be analyzed. Quickly cover each open top with one or two sheets of clean aluminum foil and subsequently apply screw caps to tightly seal the jars. Sixteen ounce (16 oz.) (approx. 500 ml) soil or "mason" type jars are preferred; jars less than 8 oz. total capacity (approx. 250 ml), should not be used.
- (2) Allow headspace development for at least 10 minutes. Vigorously shake jars for 15 seconds both at the beginning and end of the headspace development period. Where ambient temperatures are below 32 F (0 C), headspace development should be within a heated vehicle or building.
- (3) Subsequently to headspace development, remove screw lid/expose foil seal. Quickly puncture foil seal with instrument sampling probe, to a point about one-half of the headspace depth. Exercise care to avoid uptake of water droplets or soil particulates.

As an alternative, syringe withdrawal of a headspace sample with subsequent injection to instrument probe or septum-fitted inlet is acceptable contingent upon verification of methodology accuracy using a test gas standard.

- (4) Following probe insertion through foil seal and/or sample injection to the probe, record highest meter response as the jar headspace concentration. Using foil seal/probe insertion method, maximum response should occur between 2 and 5 seconds. Erratic meter response may occur at high organic vapor concentrations or conditions of elevated headspace moisture, in which case headspace data should be discounted.
- (5) The headspace screening data from both jar samples should be recorded and compared; generally, replicate values should be consistent to plus or minus 20%.
- (6) PID and FID field instruments shall be operated and calibrated to yield "total organic vapors" in ppm (v/v) as benzene. PID instruments must be operated with a 10.0 eV (+/-) lamp source. Operation, maintenance, and calibration shall be performed in accordance with the manufacturer's specifications. For jar headspace analysis, instrument calibration shall be checked/adjusted no less than once every 10 analyses, or daily, whichever is greater.
- (7) Instrumentation with digital (LED/LCD) displays may not be able to discern maximum headspace response unless equipped with a "maximum hold" feature or strip-chart recorder. Deviations, departures and/or additions to the above procedures should be consistent with 310 CMR 40.0017. In such cases, compelling technical justification must be presented and documented by the methodology proponent.

APPENDIX III

PETROLEUM HYDROCARBON ANALYSIS

A number of analytical procedures are commonly used to quantitatively and/or qualitatively evaluate heavier molecular weight (i.e., number 2, 4, and 6 Oils) petroleum contaminants within a soil matrix. Many of these procedures are modifications of methods developed for water or wastewater analyses. For the purpose of this policy, the Department suggests using the following methodologies or their equivalent:

Quantitative Total Petroleum hydrocarbons (TPH) in mg/kg

- * Standard Methods Procedure 503B/E, partition-infrared methods;
- * EPA Method 418.1, modified for soil extraction/analysis.

Qualitative/Quantitative TPH in mg/kg

Solvent-extraction analysis using capillary GC-FID, including:

- * "Methodology for Comparison of Petroleum Oils by Gas Chromatography", ASTM Procedure D 3328;
- * "Oil Spill Identification by Gas Chromatograph", U.S. Coast Guard, Report No. CG-D-52-77; and
- * "Gas Chromatograph of High Molecular Weight Hydrocarbons with an Inorganic Salt Eutectic Column", Journal of Analytical Chemistry, Vol. 50, No. 2 (February 1987).

Soil's samples for TPH analysis should, at a minimum be collected and handled in the following manner:

- * a representative samples should be collected (representative samples will be determined on a case-by-case basis);
- * use of pre-cleaned 16 oz. wide mouth glass jars;
- * sample should be iced down or refrigerated to retard biodegradation;
- * expedite delivery to lab; and
- * analysis should be conducted as soon as possible after sample collection.

For further sampling, storage and handling instructions see the specific TPH analytical method which is to be used.

Department of Environmental Protection Contacts



DEP Boston
One Winter Street
Boston, MA 02108
Telephone: 617-292-5500
Fax: 617-556-1049

Questions? Policy Information?

Call: **MCP Hotline at InfoLine**



617-338-2255 from area code 617 and out of state

1-800-462-0444 from area codes 413 and 508

617-292-5546 for computer/modem access to policies and regulations



DEP Western Region
436 Dwight Street
Suite 402
Springfield, MA 01103
Telephone: 413-784-1100
Fax: 413-784-1149

Adams
Agawam
Alford
Amherst
Ashfield
Becket
Belchertown
Bernardston
Blandford
Brimfield
Buckland
Charlemont
Cheshire
Chester
Chesterfield
Chicopee
Clandonburg

Colrain
Conway
Cummington
Dalton
Deerfield
Easthampton
East Longmeadow
Egremont
Enfield
Florida
Gill
Goshen
Granby
Grannyville
Great Barrington
Greenfield
Hadley

Hampden
Hancock
Hatfield
Hawley
Heath
Hinsdale
Holland
Holyoke
Huntington
Lanesborough
Lee
Lenox
Leverett
Leyden
Longmeadow
Ludlow
Middlefield

Monroe
Montague
Monterey
Montgomery
Monson
Mount Washington
New Ashford
New Marlborough
New Salem
North Adams
Northampton
Northfield
Orange
Otis
Palmer
Pelham
Pena

Pittsfield
Plainfield
Richmond
Rowe
Russell
Sandwich
Savoy
Shelfield
Shelburne
Shutesbury
Southampton
South Hadley
Southwick
Springfield
Stockbridge
Sunderland
Tolland

Tyringham
Wales
Ware
Warwick
Washington
Wendell
Westfield
Westhampton
West Springfield
West Stockbridge
Whately
Wilbraham
Williamsburg
Williamstown
Windsor
Worthington



DEP Central Region
75 Grove Street
Worcester, MA 01605
Telephone: 508-792-7650
Fax: 508-792-7621

Aston
Ashburnham
Ashby
Athol
Auburn
Ayer
Barre
Bellingham
Berlin
Blackstone
Bolton
Boxborough
Boylston
Brookfield

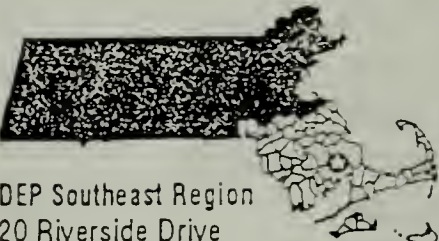
Charlton
Clinton
Douglas
Dudley
Dunstable
East Brookfield
Fitchburg
Gardner
Grafton
Groton
Harvard
Hardwick
Holden
Hopdale

Hopkinton
Hubbardston
Hudson
Holliston
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Commonwealth of Massachusetts
Executive Office of Environmental Affairs

Department of Environmental Protection

William F. Weld
Governor

Trudy Coxe
Secretary, EOE

Thomas B. Powers
Acting Commissioner

UIC NOTIFICATION FORM

DIVISION OF WATER SUPPLY

The Underground Injection Control (UIC) program protects drinking water by regulating discharges to the ground via injection wells such as dry wells, septic systems tied to industrial processes, and other subsurface leaching systems. Pursuant to UIC regulations (310 CMR 27.00), where the potential exists for pollutants to enter an injection well (e.g. by means of a floor drain) and the presence of the pollutants causes or is likely to cause a violation of any Massachusetts Drinking Water Regulation or which adversely affects or is likely to adversely affect the health of persons, the use of the well is prohibited. With the exception of discharges authorized under the Department's Ground Water Discharge Permit program, the Department considers this prohibition to include the use of any injection well at facilities which have in the past or currently use, store, or otherwise manage hazardous materials and/or wastes as defined in 310 CMR 30.000 and 310 CMR 40.0000.

This form shall serve as notice to the DEP of the elimination of the use of an unauthorized injection well. The structural option which has been chosen to bring the system into compliance should be noted under item I. Submit all information and attachments for that option, as well as for item II, as noted. **This form should be submitted after completing the closure of the injection well.**

I. Option chosen for discharge system when eliminating the use of the injection well:

 A. **Sealing:** Plug point of entry, if applicable (see 248 CMR 2.09).

 1. Copy of Form WS1: Notice of Plumbing Inspector Approval to Seal Floor Drain
(where applicable), and Plumbing Permit Number: #

 2. Date of plugging: / /

 B. **Tank:** Connect discharge to holding tank meeting appropriate DEP requirements.

 1. Floor plan with tank location

 2. Type of tank:

 Pre-Cast Tight Tank (DEP Permit BWP IW 01)

 Converted System (e.g. Converted MDC Trap) (DEP Permit BWP IW 28)

 Containment Basin (specified attachments required)

 3. DEP permit & permit/transmittal #, where applicable: #

 4. Date of connection: / /

 C. **Sewer:** Connect discharge to municipal sanitary sewer.

 1. Sewer discharge permit & permit/transmittal # (from DEP and/or other
administrative entity): #

 2. Date of hookup: / /

SEE REVERSE SIDE

space necessary): _____

___ **A. Screening and Analytical Results:** This information must be submitted in accordance with criteria specified in the document entitled "Massachusetts Closure Requirements for Shallow Injection Wells."

System's Previous Final Point of Discharge: _____

Number of Points of Entry to System: before closure: _____ after closure: _____

Name of Business: _____

Mailing Address: _____

Location: _____

Facility Owner: _____ Phone: (____) ____ - _____

Nature of Business: _____

EPA Hazardous Waste Generator ID Number: _____

I UNDERSTAND THAT I MUST HANDLE, STORE, AND DISPOSE OF ALL HAZARDOUS WASTES IN AN ENVIRONMENTALLY SOUND MANNER IN ACCORDANCE WITH ALL APPROPRIATE REGULATIONS.

DATE _____

Underground Injection Control Program
DEP/Division of Water Supply
One Winter Street, 9th floor
Boston, MA 02108

Local Board of Health
Local Plumbing Inspector



Commonwealth of Massachusetts
Executive Office of Environmental Affairs

Department of Environmental Protection

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SHALLOW INJECTION WELL CLOSURE Q & A SUMMARY FOR THE NON-TECHNICAL READER February 1995

WHY IS THIS IMPORTANT? WHAT'S IN IT FOR ME?

Four primary interests are at stake here: public health, environmental protection, business owners' financial concerns, and municipal financial concerns.

Industrial floor drain discharges to the ground are a suspected source of contamination of several water supplies in Massachusetts. Many businesses *may* be unintentionally polluting the environment in this fashion. The Department is interested in helping such businesses to identify and correct problems that exist now, *before it becomes a more serious environmental or financial problem.*

This document describes how to correct an unauthorized system. These closure costs always include the standard expenses of disposing of any remaining sludge in the system and the structural costs of fixing the system (e.g., sealing the drain or connecting it to a tank or sewer). If further remedial work is necessary (see below), additional cleanup costs also apply. These additional costs usually range from roughly \$2,000 (to see if any pollution has reached the environment) to \$10,000 (to cleanup a confined, relatively small amount of pollution). That may sound like a lot, and it is for a small business, but it is a fraction of what it may cost to fix the problem should the pollution reach a public water supply.

The threat is real. If you own or operate a dry cleaner, vehicle repair garage, auto body shop, machine shop, metal plating facility, furniture stripping operation, or other business which uses hazardous materials, do not jeopardize your financial interests or the environment by ignoring it: the longer the pollution is in the ground, the longer it has to spread out, and the costlier it will be to clean it up.

HOW DO I KNOW IF THIS DOCUMENT AFFECTS ME?

This document primarily addresses floor drains. The first thing you need to do is to find out where your floor drain leads. *This is the most critical piece of information.* If the floor drain ultimately is piped to any system discharging beneath the ground (e.g., septic system, dry well, MDC trap leading to a leachfield), then this document applies to you. If it does not, or if you do not have any floor drains, you are probably not subject to this document.

If you do not know where your drains lead, find out! Look at old "as-built" plans, perform a dye test, check municipal records, contact the building's architect, perform more sophisticated techniques to trace piping, or even dig up the area. If your drains are not connected to a municipal sewer line, or if you do not have a tight tank which you pump regularly, your system probably leads to the soil. It is **best** to assume it does until you determine otherwise.

WHAT IS THE MINIMUM I HAVE TO DO IF THE DOCUMENT APPLIES TO ME?

In addition to structurally fixing your floor drainage system (see the last paragraph of section 1.0), you need to follow the guidance in section 5.0 ("Initial Closure Activities") of this document. Section 5.0 details guidance for removing any sludge from your drain system, disposing of this sludge properly, and then sealing off any inlets into the system so nothing else can get into it. It is also a very good idea to have this sludge tested; this test will give you a good idea of what may have gotten into the soil as well.

DO I HAVE TO DO ANYTHING ELSE, OR IS THAT IT?

That depends. Look at the text in section 6.0 ("Additional Closure Activities") before item 6.1. To summarize:

- If the Department has sent you an official order requiring that you perform the actions specified in section 6.0, then you must perform them. You should know if you have received such a letter. They are usually only sent after the Department has performed an inspection at a facility.
- If you know that some oil or other hazardous material has gotten into your system, and it could have gotten into the soil, then you should follow the guidance in section 6.0.
- If neither of these two criteria are met, then you do not have to do anything under section 6.0. HOWEVER, it is a very good idea to take the actions in section 6.0 anyway, in order to protect yourself. If your system is clean, and you structurally fix it (for example, by connecting the floor drains to a Department-approved holding tank), you will not have to wonder what liability you might have at the end of your pipe. If some pollution *has* gotten into your drain system or the surrounding soil, it is cheaper to deal with it now rather than later. If you do not perform these actions, the Department may still require you to clean it up if later information indicates that some pollution may have gotten down your drain and into the soil. By then, it will likely have spread out and be much more costly to clean up.

DO I HAVE TO HIRE A CONSULTANT?

For releases greater than a certain amount, you will have to hire a Licensed Site Professional (LSP, see section 3.0). Otherwise, you do not have to, but the Department recommends that you hire a qualified environmental consultant to make sure you are doing everything according to the state's standards.

HOW LONG HAS ALL THIS BEEN NECESSARY?

Federal UIC regulations were required by the Safe Drinking Water Act of 1974. Massachusetts' UIC regulations have been in place since 1982. However, due to inconsistencies between these regulations and the state building and plumbing codes, many facilities were built in violation of the UIC regulations. The Plumbing Code was revised in 1991 and 1992 to resolve these inconsistencies.

WHAT IS THE "MCP" THAT IS MENTIONED THROUGHOUT THIS DOCUMENT?

"MCP" stands for Massachusetts Contingency Plan, the state regulations which address releases and threats of releases of oil and hazardous materials to the environment. It sets requirements for reporting releases to the Department, for hiring an LSP to evaluate the problem created by the release, and for making cleanup decisions.

WHERE DO I GET MORE INFORMATION?

For information on the UIC program, contact the Division of Water Supply at 617/292-5770. For information on the MCP, contact the MCP Hotline at 617/338-2255 or 1-800-462-0444. For a copy of the MCP, please contact the State House Bookstore at 617/727-2834 or 413/784-1376. For lists of LSPs, please contact the LSP Board at 617/292-5794.